SHUTTLE CRITICAL ITEMS LIST - ORBITER

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SUBSYSTEM :ACTUATION MECH-ET/ORB DOOR FMEA NO 02-4D-012700-2 REV:02/17/88

ASSEMBLY :ET DOOR DRIVE ACTUATORS LEFT/RIGHT CRIT. FUNC: 1R
P/N RI :MC452-0123-0001 CRIT. HDW: 2

P/N VENDOR: VEHICLE 102 103 104
QUANTITY :8 EFFECTIVITY: X X X

:EIGHT PHASE(S): PL LO X OO DO LS

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS

PREPARED BY: APPROVED BY: APPROVED BY (NASA):

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QE W. J. SMITH QE TO VALUE K. T. QE OF BAR SHIPS OF THE SHIP OF TH

TTEM:

SWITCH, LIMIT LEFT AND RIGHT ET UMBILICAL DOOR DRIVE ACTUATORS

FUNCTION:

PROVIDES THE MEANS TO MECHANICALLY DETECT THE LEFT AND RIGHT DOOR DRIVE ACTUATORS END OF TRAVEL AND ELECTRICALLY SIGNAL ASSOCIATED LOGIC AND MEASUREMENT INPUTS AS REQUIRED FOR SEQUENTIAL CONTROL OPERATIONS AND TALKBACKS. 50V56A3S1,S2,S3,S4. 50V56A4S1,S2,S3,S4

FAILURE MODE:

CONDUCTS INADVERTENTLY, PREMATURELY CLOSES, SHORTS

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, VIBRATION, MECHANICAL SHOCK, CONTAMINATION, FOREIGN OBJECT, DEBRIS

EFFECT(S) ON:

- (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
- (A) FUNCTION DEGRADATION/LOSS OF REDUNDANCY.
- (B) INADVERTENT CLOSURE OF ONE LIMIT SWITCH COULD INHIBIT OPERATION OF ONE DRIVE MOTOR. THE REDUNDANT DRIVE WILL COMPLETE THE FUNCTION BUT AT A SLOWER RATE AND LONGER TIME. NO EFFECT NORMAL MISSION.
- (C,D) NO EFFECT FIRST FAILURE NEXT ASSOCIATED FAILURE PRECLUDES DOOR CLOSURE CAUSING POSSIBLE LOSS OF CREM/VEHICLE DUE TO DAMAGE CAUSED BY THERMAL EFFECTS IF THE DOORS CANNOT BE CLOSED AND FULLY LATCHED FOR SAFE RE-ENTRY.

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DISPOSITION & RATIONALE:

- (A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE
- (A-D) DISPOSITION AND RATIONALE REFER TO APPENDIX A, ITEM NO. 4 LIMIT SWITCH.

(B) GROUND TURNAROUND TEST

OPEN/CLOSE (1-"G") OPERATIONAL CHECKOUT OF RIGHT-HAND/LEFT-HAND ET DOORS; MOTOR 1, MOTOR 2 AND DUAL MOTOR OPERATION. SINGLE/DUAL MOTOR DOOR DRIVE TIMES VERIFIED TO BE WITHIN ALLOWABLE LIMITS. SINGLE MOTOR OPERATION TO VERIFY THAT INDIVIDUAL LIMIT SWITCHES FUNCTION PROPERLY. FREQUENCY - ALL VEHICLES AT GROUND TURNAROUND.

(E) OPERATIONAL USE

AFTER THE SECOND FAILURE, THE CAPABILITY EXISTS TO REMOVE INHIBIT BY TURNING "OFF" THE MCA LOGIC SWITCH.